

UNITED STATES OF AMERICA
FEDERAL AVIATION AGENCY
WASHINGTON, D.C.

Civil Air Regulations Amendment 4b-10

Effective: April 23, 1959

Issued: April 17, 1959

PART 4B—AIRPLANE AIRWORTHINESS; TRANSPORT CATEGORIES

Cargo Compartment Classification “E” For All-Cargo Operations

The presently effective §§ 4b.382 and 4b.383 of Part 4b of the Civil Air Regulations prescribe design conditions for the protection of cargo and baggage compartments against fire. These requirements classify compartments into “A”, “B”, “C”, and “D”.

Class “A” and “B” compartments are those which provide access to all parts of the compartment to permit the use of hand fire extinguishers. In addition, Class “B” compartments require that all contents therein can be moved by hand. Class “C” and “D” compartments do not have this accessibility. Instead, Class “C” compartments are required to have a fire-extinguishing system capable of effectively flooding the entire compartment. Class “D” compartments are those in which the volume of air and its flow are so limited as to cause suppression of fire as a result of oxygen depletion.

An aircarrier engaged in the carriage of cargo exclusively recommended to the Civil Aeronautics Board an amendment of the existing regulations to provide an additional classification of cargo compartments more specifically applicable to bulk loading of the main cabin area of an airplane engaged in cargo operations. The carrier indicated that the weight and bulk of the cargo to be carried in the main cabin make its movement by the crew impractical. Furthermore, the loss of cargo space by providing accessibility to all parts of the compartment and its contents results in an unnecessary economic burden. For these reasons, it is not practical to classify the main cabin as either an “A” or “B” compartment. Classification as a “C” compartment, considering the relatively large volume of the cabin, makes it impractical to carry a sufficient quantity of fire-extinguishing agent to flood effectively the entire cabin. Due to the large volume of the cabin, compliance with the conditions set forth for Class “D” compartments also becomes extremely difficult because so much oxygen exists that prompt suppression of the fire through oxygen depletion is not attainable.

The Civil Aeronautics Board included a proposed change to the cargo and baggage compartment fire protection requirements of Part 4b in a notice of proposed rule making issued in Draft Release No. 58-1C, dated December 22, 1958. That proposal, although it appeared to cover the intent, did not define in detail the specific conditions applicable to bulk-loaded cabins. After further study and considering the comments on the draft release, it is found that setting forth specific conditions is necessary. Therefore the amendment contained herein establishes a new Class “E” cargo compartment and prescribes the detailed design conditions applicable thereto.

An evaluation of Daily Mechanical Reports and air carrier incident reports disclosed that between 1951 and 1956 during 18,971,602 hours of passenger-carrying flight time there had been four inflight fires in baggage compartments. It was reported that one of these fires was attributed to the cargo coming in contact with a cockpit heater, one was caused by matches in a passenger's bag, and two resulted from baggage being loaded against unprotected light bulbs. Additionally, three fires detected while loading passengers' baggage before departure, were found to be caused by matches in passengers' bags. During this same period, there were no incidents of fire in 572,443 hours of flight in all-cargo operations. In the period 1957-1958, one additional fire was reported in the Daily Mechanical Reports. The cause of this fire was found to have been due to baggage being placed against an unprotected light bulb.

It has been determined that this amendment will make fire prevention requirements for all-cargo aircraft more realistic, without any material reduction in safety. Accordingly, § 4b.383 of Part 4b of the Civil Air Regulations is being amended to provide for all-cargo operations the new Class “E” cargo compartment located in the main cabin of an airplane. Such compartment is required to be equipped with a smoke or fire detector system to warn the crew of smoke or fire, to be completely lined with fire-resistant material, to provide for control of ventilation by the crew within the compartment, and to provide means for excluding

hazardous quantities of smoke, flames, or noxious gases from entering the flight crew's compartment. Furthermore, it requires that crew-emergency exits remain accessible under all loading conditions.

In conjunction with the establishment of Class "E" cargo compartments, § 4b.380 (c) is being amended to provide protective breathing equipment for the crew when the aircraft contains such a compartment. Since the operating record reveals that heat sources in proximity to cargo constitute a fire hazard, § 4b.382 is also being amended to provide fire protection from sources of heat such as light bulbs, heater ducts, electrical appliances, and combustion heaters in all classes of compartments.

In addition to the foregoing, § 4b.383 (b), applicable to "B" compartments, is being amended by deleting the requirement that while the aircraft is in flight a member of the crew must be able to move by hand all contents of the compartment. This deletion is considered to be consistent with the requirements for Class "A" and "E" compartments.

Interested persons have been afforded an opportunity to participate in the making of this amendment (24 F.R. 128), and due consideration has been given to all relevant matter presented. Since this amendment is relaxatory in nature and imposes no additional burden on any person, it may be made effective upon publication in the FEDERAL REGISTER.

In consideration of the foregoing, the Administrator of the Federal Aviation Agency hereby adopts the following amendment to Part 4b of the Civil Air Regulations (14 CFR Part 4b, as amended) effective April 23, 1959:

1. By amending § 4b.380 (c) by deleting the words "Class A or B" and inserting in lieu thereof "Class A, B, or E".
2. By amending § 4b.382 by adding a new paragraph (d) and a note thereunder, to read as follows:
(d) Sources of heat within the compartment shall be shielded and insulated to prevent igniting the cargo.

NOTE: Sources of heat likely to ignite cargo include light bulbs, combustion heaters, heater ducts, electrical appliances, etc.

3. By amending the introductory paragraph of § 4b.383 (b) to read as follows:

Cargo and baggage compartments shall be classified as "B" if sufficient access is provided while in flight to enable a member of the crew to reach effectively all parts of the compartment and its contents with a hand fire extinguisher. Compliance shall be shown, with the following:

4. By amending § 4b.383 by adding a new paragraph (e) to read as follows:

(e) *Class E.* On airplanes used for the carriage of cargo only it shall be acceptable to classify the cabin area as a Class "E" compartment. Compliance shall be shown with the following:

- (1) The compartment shall be completely lined with fire-resistant material.
- (2) The compartment shall be equipped with a separate system of an approved type smoke or fire detector to give warning at the pilot or flight engineer station.
- (3) Means shall be provided to shut off the ventilating airflow to or within the compartment. Controls for such means shall be accessible to the flight crew in the crew compartment.
- (4) Means shall be provided to exclude hazardous quantities of smoke, flames, or noxious gases from entering the flight crew compartment. (See § 4b.380 (c) for protective breathing equipment.)

- (5) Required crew emergency exits shall remain accessible under all cargo loading conditions.

(Sec. 313(a), 72 Stat. 752; 49 U.S.C. 1354 (a). Interpret or apply secs. 601, 603; 72 Stat. 775, 776; 49 U.S.C. 1421, 1423)

Issued in Washington, D.C., on April 17, 1959.

E. R. QUESADA,
Administrator.

